

REMARKS

This is intended as a full and complete response to the Final Office Action dated April 2, 2007, having a shortened statutory period for response set to expire on June 2, 2007. Applicants submit this response to place the application in condition for allowance or in better form for appeal. Please reconsider the claims pending in the application for reasons discussed below.

Claims 1-44 are pending in the application. Claims 1-44 remain pending following entry of this response. Applicants submit that the amendments and new claims do not introduce new matter.

Claim Rejections - 35 U.S.C. § 102

Claims 1-3, 5-7, 9-12, 14-16, 18-21, 23-25, 27-30, 32-34, 36-38, 40-42, and 44 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Depledge et al (U.S. 5,899,988) (hereinafter "*Depledge*").

Applicants respectfully traverse this rejection.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

In this case, *Depledge* does not disclose "each and every element as set forth in the claim". For example, *Depledge* does not disclose a method of logically representing

relationships between data elements that includes the act of “*providing a logical representation of the data, the logical representation abstractly describing a second physical representation of the data, wherein the second physical representation of the data is generated from the first physical representation of the data,*” as recited in claim

1. Independent claim 11 includes a similar limitation.

Regarding this first element of claim 1, the Examiner states in Final Office Action, p.17:

With respect to Applicant's argument, the argument is not correct and Examiner is not persuaded because Depledge clearly provides a logical representation of the data (see Figure 2A; Note that the "Bitmap" column logically represents the data in that each bit logically corresponds to the "customer#" column in Figure 1.), the logical representation abstractly describes a second physical representation of the data (see Figure 2A; Note that the "Key" column is a second representation in that it corresponds to all of the possible values for location as shown in Figure 1 under the "Location" column. The "Bitmap" column logically describes the "Key" column by identifying which customer#s correspond to a given location.), wherein the second physical representation of the data is generated from the first physical representation of the data (The "Key" column is generated based on the data portrayed in Figure 1. The "Key" column corresponds to the locations within the data table (100) of Figure 1. By looking at the bitmapped index (200), one can see how each location logically corresponds to each customer#.).

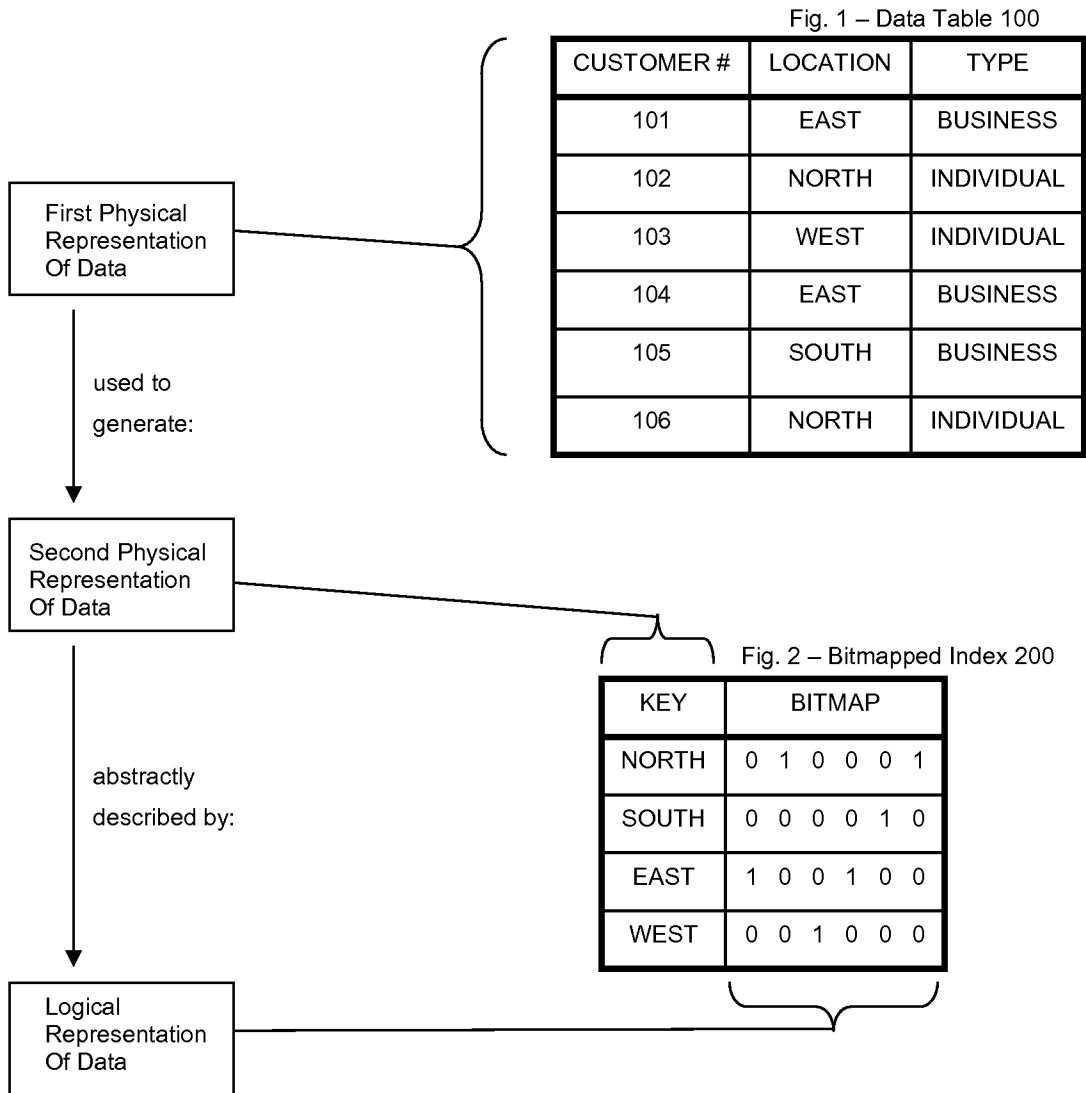
The second physical representation is distinct from the logical representation in that the "Key" column represents the possible values for a location in data table (100), whereas the "Bitmap" column represents the location of each customer# in data table (100). Therefore, both representations are two totally different/distinct relationships.

In this statement, the Examiner argues that the “Bitmap” columns of the bitmapped index 200 (*i.e.*, a “logical representation”) abstractly describes the “Key” column of the bitmapped index 200 (*i.e.*, a “second physical representation of the data”). Further, the Examiner asserts that the “Key” column of the bitmapped index 200 (*i.e.*, a “second

physical representation of the data”) is generated from “data table (100) of Figure 1” (i.e., a “first physical representation of the data”). Thus, the Examiner’s analogy to the recited elements can be illustrated as follows:

PRESENT CLAIM

DEPLEDGE



As stated in previous communications, Applicants respectfully disagree with the Examiner’s use of two columns of the bitmapped index 200 as analogous to the “logical

representation” and the “second physical representation,” which are claimed as distinct elements. Applicants submit that the Bitmap and Key columns are integral parts of the bitmapped index 200 (*Depledge* Fig. 2), and cannot be properly considered to constitute two different representations of data. For example, the Bitmap column, if isolated from the Key column, has no discernable meaning whatsoever, and does not “represent” anything. Thus, even assuming the index 200, as a whole, may be considered a representation of data, the constituent parts of the index cannot be understood as distinct representations of data.

In this regard, Applicants respectfully point out that the Examiner’s analysis fails to appreciate the distinction between a representation of data, and the data itself, as is required by the claims. For example, claim 1 recites “a first physical representation of data” and “a second physical representation of data”. Claim 1 further recites “data elements defined according to [the] first physical representation of data”. This language makes clear that the first and second physical representations define the representation of the data, but are not themselves the data. Common examples of physical data representations include document type definitions (DTD) and schemas. The Examiner’s analysis focuses on the actual physical tables and their respective data, not on data representations of the data (*i.e.* the schemas of the tables and indexes). Further, there is no suggestion that the data structures relied upon by the Examiner are defined according to different schemas. In fact, quite the opposite, the data structures (*i.e.* the table 100 and the index 200) are both tables that conform to a relational database schema. Therefore, the Examiner’s analogy is invalid, and applicants respectfully request that the rejection be withdrawn.

However, even assuming, *arguendo*, that the Bitmap and Key columns are considered as distinct “representations,” the Examiner’s analogy fails to conform to the remaining limitations of claim 1. For example, the second element of claim 1 recites: “*on the basis of the relationships between the data elements defined according to the first physical representation of the data, determining corresponding relationships between corresponding data structures defined according to the second physical*”

representation of the data.” Applying the Examiner’s analogy, this statement would be translated as:

on the basis of the relationships between the data elements defined according to the Data Table 100 (“first physical representation”), determining corresponding relationships between corresponding data structures defined according to the Key Column (“second physical representation”) of the Bitmapped Index 200.

Applicants submit that this translated statement makes no sense. *Depledge* does not disclose any data structures of any sort that are “defined according to the Key Column.” Even if we assume that the values of the Key Column (*i.e.*, “NORTH”, “SOUTH”, “EAST”, “WEST”) are data structures, there is no relationship between these values that is determined “on the basis of the relationships between data elements defined according to the Data Table 100.” Clearly, the Examiner’s analogy does not conform to this limitation, and is thus invalid.

The third element of claim 1 recites: “*generating logical relationships abstractly describing the determined corresponding relationships, each logical relationship defining a path between data structures of the second physical representation.*” Independent claims 11, 19, 29, 35 and 44 include similar limitations. Applying the Examiner’s analogy, this element would be translated as:

generating logical relationships abstractly describing the determined corresponding relationships, each logical relationship defining a path between data structures of the Key Column (“second physical representation”) of the Bitmapped Index 200.

As described above, the previous step of “determining corresponding relationships” makes no sense as applied to the Examiner’s analogy. Thus, there can

be no “determined corresponding relationships,” as required by this step. However, even ignoring this problem, *arguendo*, the Examiner’s analogy also fails to generate a logical relationship defining a path between data structures of the Key Column. Even if we assume that the data structures are the values of the Key Column (*i.e.*, “NORTH”, “SOUTH”, “EAST”, “WEST”), it makes no sense to define a “path” between these values. Again, the Examiner’s analogy does not conform to this limitation, and is thus invalid.

Turning now to claim 18: *Depledge* does not teach “receiving an abstract query comprising logical fields and corresponding values, wherein each of the logical fields is defined in the data abstraction model,” and “transforming, by operation of a processor, the abstract query into an executable query capable of being executed against the physical data,” as recited in claim 18.

In rejecting claim 18, the Examiner argues in Final Office Action, p. 8:

Depledge further teaches transforming the abstract query into an executable query capable of being executed against the physical data (see Fig. 1 and 2A and column 3, lines 22-44; Note that once the location was changed, the values were then changed in the physical data using an executable query which flipped the bits representing the new changed values.); wherein the transforming is done using the data abstraction model and wherein the data abstraction model defines a specific path for traversing the data structures containing the physical data to reach the one or more result fields (see Fig. 3 and column 3, lines 22-44; Note that a bitmap index such as the one showed in Fig 3 (302) is used to map each bit for a given location to the physical data (shown in Fig. 1). The result index (320) represents the bitmap of the physical data as a result of the query terms portrayed in Fig. 3 (*i.e.* TYPE = 'BUSINESS' and LOCATION = 'EAST' or LOCATION = 'SOUTH').).

Independent claim 36 is rejected on a similar basis. Here, the Examiner asserts that the bitmapped indexes of *Depledge* (*e.g.*, items 200 and 300) teach the recited element of a data abstraction model. However, following the Examiner’s analogy, this would require the step of “receiving an abstract query comprising logical fields,” wherein the logical fields are defined in a bitmapped index (*i.e.*, “data abstraction model”). Applicants

submit that the bitmapped indexes of *Depledge* do not define logical fields, or any other type of field.

Further, *Depledge* does not disclose the recited step of “transforming, by operation of a processor, the abstract query into an executable query capable of being executed against the physical data,” or any other type of transformation of one query into another. The Examiner states “*Note that once the location was changed, the values were then changed in the physical data using an executable query which flipped the bits.*” Clearly, the “bits” do not constitute an abstract query, a logical query, or any kind of query. Therefore, Applicants submit that “flipping the bits” does not teach transforming an abstract query into an executable query, but rather teaches transforming bits within the bitmapped index, *i.e.*, the “data abstraction model” according to the Examiner’s analogy.

For the foregoing reasons, applicants respectfully submit that *Depledge* does not teach “each and every element” of the recited claim. Therefore, the claims are believed to be allowable, and allowance of the claims is respectfully requested.

Claim Rejections - 35 U.S.C. § 103

Claims 4, 8, 13, 17, 22, 26, 31, 35, 39, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Depledge* in view of *Murthy et al.* (U.S. 2004/0220927 A1).

Applicants respectfully traverse this rejection.

In rejecting these claims, the Examiner relies on *Depledge* as applied to the claims discussed above. Therefore, for the reasons provided above, Applicants respectfully submit that the rejection is obviated. Therefore, the claims are believed to be allowable, and allowance of the claims is respectfully requested.

Conclusion

Having addressed all issues set out in the office action, Applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

If the Examiner believes any issues remain that prevent this application from going to issue, the Examiner is strongly encouraged to contact Gero McClellan, attorney of record, at (336) 643-3065, to discuss strategies for moving prosecution forward toward allowance.

Respectfully submitted, and
S-signed pursuant to 37 CFR 1.4,

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